

WHAT IS CLAIMED IS:

1. A computer-implemented method for printing a plurality of digital images, the method comprising steps of:

- 5 (A) receiving the plurality of images over a communications bus;
- (B) storing the plurality of digital images in a RAMdisk;
- (C) retrieving the plurality of digital images from the RAMdisk; and
- 10 (D) printing the plurality of digital images on output media.

2. The method of claim 1, wherein steps (A)-(D) are performed by a print server, and wherein the method further comprises a step of:

- 5 (E) at a print client, transmitting the plurality of digital images to the server over the communications bus.

3. The method of claim 1, wherein the step (B) comprises a step of storing the plurality of digital images in the RAMdisk in the order in which the plurality of digital images are to be printed, and

5 wherein the step (C) comprises a step of retrieving the plurality of digital images from the RAMdisk in the

order in which the plurality of digital images are to be printed.

4. The method of claim 3, wherein the step (C) further comprises a step of deleting each of the plurality of digital images after it is retrieved from the RAMdisk.

5. The method of claim 1, wherein the step (D) comprises a step of printing the plurality of digital images using a print engine without stopping and restarting the print engine.

6. A computer-implemented method for printing a plurality of digital images, the method comprising steps of:

- 5 (A) at a print client, transmitting the plurality of digital images to a print server over a communications bus
- (B) at a print server, receiving the plurality of images over the communications bus;
- 10 (C) at the print server, storing the plurality of digital images in a RAMdisk in the order in which the plurality of digital images are to be printed;
- 15 (D) at the print server, retrieving the plurality of digital images from the RAMdisk in the order in which the

plurality of digital images are to be printed;

(E) at the print server, deleting the plurality of digital images after they are retrieved from the RAMdisk; and

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(F) at the print server, printing the plurality of digital images on output media using a print engine without stopping and restarting the print engine.

7. A system for printing a plurality of digital images, the system comprising:

a communications bus;

reception means for receiving the plurality of images over a communications bus;

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storage means for storing the plurality of digital images in a RAMdisk;

retrieval means for retrieving the plurality of digital images from the RAMdisk; and

printing means for printing the plurality of digital images on output media.

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8. The system of claim 7, wherein the system further comprises a print server, wherein the print server comprises the reception means, the storage means, the retrieval means, and the printing means, and wherein the system further comprises a print client, the print client comprising transmission means for transmitting the plurality of digital images to the print server over the communications bus.

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9. The system of claim 7, wherein the storage means comprises means for storing the plurality of digital images in the RAMdisk in the order in which the plurality of digital images are to be printed, and
5 wherein the retrieval means comprises means for retrieving the plurality of digital images from the RAMdisk in the order in which the plurality of digital images are to be printed.

10. The system of claim 7, wherein the printing means comprises means for printing the plurality of digital images using a print engine without stopping and restarting the print engine.

11. A computer-implemented method for printing a plurality of digital images, the method comprising steps of:

- 5 (A) estimating amounts of time required to perform image processing on each of the plurality of digital images;
- (B) selecting an order in which to perform image processing on at least some of the plurality of digital images based on the
10 estimates made in step (A);
- (C) performing image processing on at least some of the plurality of digital images in the order selected in step (B) to produce a plurality of processed images;
- 15 (D) storing the plurality of processed images in an electronic memory;

(E) retrieving the plurality of processed
images from the electronic memory; and
(F) printing the plurality of processed images
20 on output media.

12. The method of claim 11, wherein steps (D)-(F)
are performed by a print server, wherein the steps (A)-
(C) are performed by a print client, and wherein the
method further comprises a step of:

5 (G) at the print client, transmitting the
plurality of processed images to the
server over a communications bus.

13. The method of claim 11, wherein the step (D)
comprises a step of storing the plurality of processed
images in the electronic memory in the order in which
the plurality of processed images are to be printed, and
5 wherein the step (E) comprises a step of retrieving the
plurality of processed images from the electronic memory
in the order in which the plurality of processed images
are to be printed.

14. The method of claim 13, wherein the step (E)
further comprises a step of deleting each of the
plurality of processed images after it is retrieved from
the electronic memory.

15. The method of claim 11, wherein the electronic
memory comprises Random Access Memory (RAM).

16. The method of claim 15, wherein a RAMdisk is implemented using the electronic memory, wherein the step (D) comprises a step of storing the plurality of processed images as a plurality of files in the RAMdisk, and wherein the step (E) comprises a step of retrieving the plurality of files from the RAMdisk.

17. The method of claim 11, wherein the step (F) comprises a step of printing the plurality of processed images using a print engine without stopping and restarting the print engine.

18. The method of claim 11, wherein the step (B) comprises steps of:

- (B) (1) identifying a first subset of the plurality of digital images having estimated processing times less than a first predetermined threshold;
- (B) (2) identifying a second subset of the plurality of digital images having estimated processing times not less than the first predetermined threshold; and
- (B) (3) selecting an order in which to perform image processing according to which the second subset is to be processed before the first subset.

19. The method of claim 18, wherein the step (B) (2) comprises a step of identifying a second subset of the plurality of digital images having estimated processing times less than a second predetermined threshold and not

5 less than the first predetermined threshold, wherein the method further comprises a step of:

(B)(4) identifying a third subset of the plurality of digital images having estimated processing times not less than
10 the second predetermined threshold; and
wherein the step (B)(3) comprises a step of selecting an order in which to perform image processing according to which the second subset is to be processed before the first subset and according to which the third
15 subset is not to be processed.

20. The method of claim 11, wherein the step (A) comprises a step of estimating amounts of time required to perform image processing on each of the plurality of images based on the numbers of pixels in each of the
5 digital images.

21. A computer-implemented method for printing a plurality of digital images, the method comprising steps of:

(A) at a print client, estimating amounts of
5 time required to perform image processing on each of the plurality of digital images;
(B) at the print client, selecting an order in which to perform image processing on at
10 least some of the plurality of digital images based on the estimates made in step (A);

- 15 (C) at the print client, performing image processing on at least some of the plurality of digital images in the order selected in step (B) to produce a plurality of processed images;
- 20 (D) at the print client, transmitting the plurality of processed images to the server over a communications bus;
- (E) at a print server, storing the plurality of processed images in a RAMdisk in the order in which the plurality of processed images are to be printed;
- 25 (F) at the print server, retrieving the plurality of processed images from the RAMdisk in the order in which the plurality of processed images are to be printed; and
- 30 (G) at the print server, printing the plurality of processed images on output media using a print engine without stopping and restarting the print engine.

22. A system for printing a plurality of digital images, the system comprising:

5 estimation means for estimating amounts of time required to perform image processing on each of the plurality of digital images;

selection means for selecting an order in which to perform image processing on at least some of the

plurality of digital images based on the estimates made by the estimation means;

10 image processing means for performing image processing on at least some of the plurality of digital images in the order selected by the selection means to produce a plurality of processed images;

15 storage means for storing the plurality of processed images in an electronic memory;

retrieval means for retrieving the plurality of processed images from the electronic memory; and

printing means for printing the plurality of processed images on output media.

23. The system of claim 22, further comprising a communications bus, a print client, and a print server; wherein the print client includes the estimation means, selection means, image processing means, and
5 transmission means for transmitting the plurality of processed images to the print server over the communications bus; and wherein the print server includes the storage means, retrieval means, and printing means.

24. The system of claim 22, wherein the storage means comprises means for storing the plurality of processed images in the electronic memory in the order in which the plurality of processed images are to be
5 printed, and wherein the retrieval means comprises means for retrieving the plurality of processed images from the electronic memory in the order in which the plurality of processed images are to be printed.

25. The system of claim 22, wherein the electronic memory comprises Random Access Memory (RAM).

26. The system of claim 25, wherein a RAMdisk is implemented using the electronic memory, wherein the storage means comprises means for storing the plurality of processed images as a plurality of files in the
5 RAMdisk, and wherein the retrieval means comprises means for retrieving the plurality of files from the RAMdisk.

27. The system of claim 22, wherein the printing means comprises means for printing the plurality of processed images using a print engine without stopping and restarting the print engine.

28. The system of claim 22, wherein the selection means comprises:

means for identifying a first subset of the plurality of digital images having estimated processing
5 times less than a first predetermined threshold;

means for identifying a second subset of the plurality of digital images having estimated processing times not less than the first predetermined threshold;
and

10 means for selecting an order in which to perform image processing according to which the second subset is to be processed before the first subset.

29. A computer-implemented method for printing a plurality of digital images, the method comprising steps of:

- 5 (A) performing image processing on a first set of images including fewer than all of the digital images to produce a first plurality of processed images;
- (B) after the step (A), activating a print engine to print the first plurality of processed images; and
- 10 (C) printing the first plurality of processed images using the print engine.

30. The method of claim 29, further comprising steps of:

- 5 (D) performing image processing on a second set of images including fewer than all of the digital images to produce a second plurality of processed images; and
- (E) printing the second plurality of processed images without stopping and reactivating the print engine.

31. The method of claim 29, wherein steps (A) is performed by a print client, wherein steps (B)-(C) are performed by a print server, and wherein the method further comprises a step of:

- 5 (D) at the print client, transmitting the first plurality of processed images to the server over a communications bus.

32. The method of claim 29, wherein the step (A) comprises steps of:

- 5 (A) (1) identifying a subset of the plurality of digital images having estimated processing times not less than a first predetermined threshold; and
- (A) (2) performing image processing on at least some of the images in the subset to produce the first plurality of processed
10 images.

33. The method of claim 29, further comprising a step of:

(D) prior to step (A), selecting a value for a variable n using the formula:

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$$n = (N * (T_{total} - T_{tick}) / T_{tick}) + 2,$$

wherein N is the number of images in the plurality of digital images; wherein T_{total} is an estimate of a period of time required to perform image processing on a single one of the plurality of digital images, load the
10 single image from a storage medium, and transmit the single image from a print client to a print server; and wherein T_{tick} is the minimum amount of time in which the single one of the plurality of digital images may be printed; and

15 wherein the first set of images processed in step (A) includes exactly n images.

34. The method of claim 33, wherein the step (D) comprises steps of:

- (D) (1) determining whether $T_{total} < T_{tick}$;

(D) (2) if it is determined that $T_{total} < T_{tick}$,
5 selecting the value of n using the formula:

$$n = (N * (T_{total} - T_{tick}) / T_{tick}) + 2; \text{ and}$$

(D) (3) assigning a value of 2 to n if it is not
determined that $T_{total} < T_{tick}$.

35. A computer-implemented method for printing a
plurality of digital images, the method comprising steps
of:

- 5 (A) at a print client, identifying a subset of
the plurality of digital images having
estimated processing times not less than a
first predetermined threshold;
- (B) at the print client, performing image
processing on at least some of the images
10 in the subset to produce a first plurality
of processed images;
- (C) at the print client, transmitting the
first plurality of processed images to a
print server over a communications bus;
- 15 (D) at the print server after the step (A),
activating a print engine to print the
first plurality of processed images;
- (E) at the print server, printing the first
plurality of processed images using the
20 print engine;
- (F) at the print client, performing image
processing on a second set of images
including fewer than all of the digital
images to produce a second plurality of
25 processed images; and

(G) at the print server, printing the second plurality of processed images without stopping and reactivating the print engine.

36. A system for printing a plurality of digital images, the system comprising:

first image processing means for performing image processing on a first set of images including fewer than
5 all of the digital images to produce a first plurality of processed images;

print engine activation means for activating a print engine to print the first plurality of processed images; and

10 first printing means for printing the first plurality of processed images using the print engine.

37. The system of claim 36, further comprising:

second image processing means for performing image processing on a second set of images including fewer than all of the digital images to produce a second
5 plurality of processed images; and

second printing means for printing the second plurality of processed images without stopping and reactivating the print engine.

38. The system of claim 36, wherein the first image processing means comprises:

means for identifying a subset of the plurality of digital images having estimated processing times not
5 less than a first predetermined threshold; and

means for performing image processing on at least some of the images in the subset to produce the first plurality of processed images.

39. The system of claim 36, further comprising:

image subset selection means means for selecting a value for a variable n using the formula:

$$n = (N * (T_{total} - T_{tick}) / T_{tick}) + 2,$$

5 wherein N is the number of images in the plurality of digital images; wherein T_{total} is an estimate of a period of time required to perform image processing on a single one of the plurality of digital images, load the single image from a storage medium, and transmit the
10 single image from a print client to a print server; and wherein T_{tick} is the minimum amount of time in which the single one of the plurality of digital images may be printed; and

 wherein the first set of images processed by the
15 first image processing means includes exactly n images.

40. The system of claim 39, wherein the image subset selection means comprises:

means for determining whether $T_{total} < T_{tick}$;

 means for selecting the value of n using the
5 formula $n = (N * (T_{total} - T_{tick}) / T_{tick}) + 2$ if it is determined that $T_{total} < T_{tick}$; and

 means for assigning a value of 2 to n if it is not determined that $T_{total} < T_{tick}$.

41. A computer-implemented method for printing a plurality of digital images, the method comprising steps of:

- 5 (A) estimating amounts of time required to perform image processing on each of the plurality of digital images;
- (B) selecting an order in which to perform image processing on at least some of the plurality of digital images based on the
10 estimates made in step (A);
- (C) performing image processing in the order selected in step (B) on a first set of images including fewer than all of the plurality of digital images to produce a
15 plurality of processed images;
- (D) transmitting the plurality of processed images over a communications bus;
- (E) receiving the plurality of processed images over the communications bus;
- 20 (F) storing the plurality of processed images in a RAMdisk;
- (G) retrieving the plurality of processed images from the RAMdisk; and
- 25 (H) after step (C), printing the plurality of processed images on output media.